

What is claimed:

1. A method of monitoring expression of one or more genes associated with oral cancer in one or more cells, comprising:

5 contacting an array of probes with a population of nucleic acids derived from one or more cells obtained from malignant oral tissue; and
determining relative hybridization of the probes to the population of nucleic acids.

2. A method of expression monitoring comprising,

10 contacting a first array of probes with a first population of nucleic acids derived from at least one cell derived from normal tissue;

contacting a second array of probes with a second population of nucleic acids derived from at least one cell derived from malignant oral tissue; and

15 determining the relative binding of the probes to the nucleic acids from the first and second populations to identify at least one probe binding to a gene that is differentially expressed between the first and second populations.

3. A method of classifying malignant oral cells, comprising:

20 determining an expression profile of each of a plurality of cells derived from malignant oral tissue; and

classifying the cells in clusters determined by similarity of expression profile.

4. A method of monitoring differentiation of a malignant oral cell lineage, comprising:

25 determining an expression profile of each of a plurality of cells derived from malignant oral tissue at different differentiation stages within the lineage;

classifying the cells in clusters determined by similarity of expression profile;

ordering the clusters by similarity of expression profile; and

determining a time course of expression levels for each of the plurality of genes at

30 different stages of differentiation in the malignant oral cell lineage.

5. A method for identifying differentially expressed transcripts associated with oral cancer, comprising:

determining an expression profile of each of a plurality of cells derived from malignant oral tissue at different differentiation stages within the lineage;
5 classifying the cells in clusters determined by similarity of expression profile;
 ordering the clusters by similarity of expression profile;
 determining a time course of expression levels for each of the plurality of genes at different stages of differentiation in the cell lineage; and
 identifying differentially expressed transcripts.

6. A method of identifying an oral cancer-associated cell type comprising:

determining an expression profile of a plurality of cells derived from malignant oral tissue;
 classifying the cells in clusters determined by similarity of expression profile; and
15 determining the nature and function of a plurality of cells.

7. A method of diagnosing a subject with oral cancer, the method comprising comparing:

the level of expression of at least one marker selected from a group of markers
20 associated with oral cancer in a sample from a subject; and
 the normal level of expression of the marker in a control sample from normal tissue, wherein a significant difference between the level of expression of the marker in the sample from the subject and the control sample from normal tissue is an indication that the subject is afflicted with oral cancer.

8. The method of claim 7, wherein the sample from the subject comprises cells obtained from the subject.

9. The method of claim 8, wherein the cells are obtained from oral tissue.

10. The method of claim 8, wherein the cells are obtained from blood cells.

11. The method of claim 7, wherein the level of expression of the marker in the sample is assessed by a method comprising:

contacting a first array of probes with a population of nucleic acids derived from one or more cells from a subject;

5 contacting a second array of probes with a population of nucleic acids derived from one or more cells from a normal control sample; and

determining relative hybridization of the probes to the population of nucleic acids in the first array to the relative hybridization of the probes to the population of nucleic acids in the second array.

10 12. The method of claim 11, wherein the nucleic acid is RNA.

13. The method of claim 11, wherein the nucleic acid is DNA.

15 14. The method of claim 11, wherein one or more nucleic acids is amplified prior to contacting to the array of probes.

15. The method of claim 7, wherein the level of expression of the marker in the sample from a subject is assessed by detecting the presence in the sample of a protein
20 corresponding to the marker.

16. The method of claim 15, wherein the presence of the protein is detected using a reagent which specifically binds with the protein.

25 17. The method of claim 16, wherein the reagent is selected from the group consisting of an antibody, an antibody derivative, and an antibody fragment.

18. The method of claim 7, wherein the level of expression of the marker in the sample is assessed by detecting the presence in the sample of at least one nucleic acid,
30 wherein the nucleic acid comprises the marker.

19. The method of claim 18, wherein the nucleic acid is RNA.

20. The method of claim 18, wherein the nucleic acid is DNA.

21. The method of claim 18, wherein one or more nucleic acids is amplified prior to assessing the sample.

22. A method for monitoring the progression of oral cancer in a subject, the method comprising:

detecting in a sample obtained from the subject at a first point in time, the expression of at least one marker selected from a group of markers associated with oral cancer;

detecting in a sample obtained from the subject at a subsequent point in time, the expression of the at least one marker, and

comparing the level of expression detected in the first and subsequent detecting steps, in order to monitor the progression of oral cancer.

23. The method of claim 22, wherein the sample comprises cells obtained from the subject.

24. The method of claim 23, wherein the cells are obtained from oral tissue.

25. The method of claim 23, wherein the cells obtained are blood cells.

26. A method of assessing the efficacy of a test compound for inhibiting oral cancer in a subject, the method comprising comparing:

expression of at least one marker selected from a group of markers associated with oral cancer in a first sample obtained from the subject and exposed to or maintained in the presence of the test compound, and

expression of the marker in a second sample obtained from the subject, wherein the second sample is not exposed to the test compound,

wherein an altered expression of the marker in the first sample, relative to the second sample, is an indication that the test compound is efficacious for inhibiting oral cancer in the subject.

27. The method of claim 26 wherein the altered expression is a lower level of expression.

28. The method of claim 26 wherein the altered expression is a higher level of expression.

29. A method of assessing the efficacy of a therapy for inhibiting oral cancer in a subject, the method comprising comparing:

expression of at least one marker selected from a group of markers associated with oral cancer in the first sample obtained from the subject prior to providing at least a portion of the therapy to the subject, and

expression of the marker in a second sample obtained from the subject following provision of the portion of the therapy,

wherein an altered level of expression of the marker in the second sample, relative to the first sample, is an indication that the therapy is efficacious for inhibiting oral cancer in the subject.

29. The method of claim 28 wherein the altered expression is a lower level of expression.

30. The method of claim 28 wherein the altered expression is a higher level of expression.

31. A method of selecting a composition for inhibiting oral cancer in a subject, the method comprising:

obtaining a sample comprising cells from the subject;

separately maintaining aliquots of the sample in the presence of a plurality of test compositions;

comparing expression of at least one marker selected from a group of markers associated with oral cancer in each of the aliquots, and

5 selecting one of the test compositions which induces an altered level of expression of the marker in the aliquot containing that test composition, relative to other test compositions.

10 31. The method of claim 30 wherein the altered level of expression is a lowered level of expression.

32. The method of claim 30 wherein the altered level of expression is a higher level of expression.

15 33. A kit for assessing whether a subject is afflicted with oral cancer, wherein the kit comprises reagents for assessing expression of at least one marker selected from the group markers associated with oral cancer.

20 34. A kit for assessing the presence of oral cancer cells, the kit comprising a nucleic acid probe wherein the probe specifically binds with at least one nucleic acid corresponding to at least one marker selected from the group of markers associated with oral cancer.